

MCA Practice Problems Worksheet #4

(algebra)

Key
Name _____

FIND THE EQUATIONS OF THE FOLLOWING LINES IN PROBLEMS 1 - 5

1. slope = 4, y-intercept = 3

a. $y = 3x + 4$

☒ b. $y = 4x - 3$

c. $y = (4/3)x$

d. $y = 4x + 3$

2. slope = $\frac{1}{2}$ through (2, 6)

☒ a. $y = \frac{1}{2}x + 5$

b. $y = \frac{1}{2}x + 6$

~~c. $y = 5x + \frac{1}{2}$~~

~~d. $y = 2x + 6$~~

3. Parallel to $y = -5x + 8$ and a y-intercept of -2

~~a. $y = -2x + 8$~~

☒ b. $y = -5x - 2$

~~c. $y = \frac{1}{5}x - 2$~~

~~d. $y = 8x - 2$~~

4. slope = -4, y-intercept = 0

~~a. $y = -4$~~

☒ b. $y = -4x$

~~c. $y - 4 = x$~~

~~d. $y = x - 4$~~

5. Perpendicular to $2x - 3y = 12$ and through (4, -5)

~~a. $y = \frac{3}{2}x - 11$~~

~~b. $y = \frac{2}{3}x - 5$~~

~~c. $y = \frac{-3}{2}x - 5$~~

☒ d. $y = \frac{-3}{2}x + 1$

6. Robert is simplifying the expression $2(a + 2b + 3c) + 4(a - 3b + 2c)$. Which of the following is equivalent?

~~a. $6a + 4b + 6c$~~

~~b. $6a + 16b + 14c$~~

☒ c. $6a - 8b + 14c$

~~d. $12abc$~~

7. Find the x-intercept of $3x - 5y = 15$

a. $x = 3$

b. $x = -3$

☒ c. $x = 5$

d. $x = -5$

8. Find the slope of the line through (-2, 2) and (7, -3).

☒ a. $-5/9$

b. $-1/5$

c. $-9/5$

d. $3/5$

9. I can rent a truck for a flat rate of \$30 plus \$12 per hour. Which equation represents the cost of the truck over h hours?

a. $C = 30h + 12$

☒ b. $C = 30 + 12h$

c. $C = 30(12)h$

d. $C = (30 + 12)h$

10. For the exponential equation $y = 5 * \left(\frac{1}{3}\right)^x$ which is true?

☒ a. y-intercept = 5; decay

b. y-intercept = $1/3$; decay

c. y-intercept = $1/3$; growth

d. y-intercept = 5; growth

11. What is the equation represented by this data?

x	0	1	2	3	4	5	6
y	7	5	3	1	-1	-3	-5

a. $y = 3x + 2$

☒ b. $y = -5x + 10$

c. $y = 4x + 1$

d. $y = 7 - 2x$

$$5mn(m-2+3n)$$

12. What is the complete factored form of $5m^2n - 10mn + 15mn^2$?

- a. $5mn(5m^2n - 10mn + 15mn^2)$ b. $5mn(m-2+3n)$ c. $5m^2n(-10mn + 15mn^2)$ d. $5(m^2n - 2mn + 3mn^2)$

$$3g+6h-6g+8h-10g+5h$$

$$-13g+19h$$

13. Simplify $3(g+2h) - 2(3g-4h) + 5(-2g+h)$

- a. 0 b. $-13g+3h$ c. $7g+19h$ d. $-13g+19h$

14. Solve $-18 = 12 - 3x$

- a. $x = 2$ b. $x = -2$ c. $x = 10$ d. $x = -10$

$$-30 = -3x$$

15. Four students have tried to solve the equation $3x + 5 = 4 + 2(x + 6)$. Which is correct?

- a. $x = 11$ b. $x = 21$ c. $x = 5$ d. $x = 16/5$

$$3x+5=2x+16$$

$$x=11$$

16. Solve $x^2 - 4 = 0$.

- a. $x = 4$ b. $x = 2$ or $x = -2$ c. $x = 2$ d. $x = 4$ or $x = -4$

17. Solve $x^2 + 7x = -6$

- a. $x = 1, x = 6$ b. $x = 7, x = 6$ c. $x = -1, x = -6$ d. $x = -1, x = 6$

$$x^2+7x+6=0$$

$$(x+6)(x+1)=0$$

18. Solve $m^2 - 5m - 14 = 0$ for m

- a. the solutions are 7 and -2 b. the solutions are -7 and 2 c. the solutions are 0 and -14 d. there are no solutions

$$(m-7)(m+2)=0$$

19. Solve the system of equations:

$$y = 3x$$

$$y = -4x - 7$$

- a. (1, 3) b. (2, -15) c. (-3, -1) d. (-1, -3)

$$3x = -4x - 7$$

$$7x = -7$$

$$x = -1$$

20. Solve the system of equations:

$$2x + 3y = 16$$

$$4x - 3y = 14$$

- a. (5, -2) b. (2, 5) c. (5, 2) d. (-5, 2)

$$4x-3y=14$$

$$2x+3y=16$$

$$6x=30$$

$$x=5$$

$$10+3y=16$$

21. Solve the following inequality: $3(x-2) < -9$

- a. $x > -1$ b. $x < -5$ c. $x > -5$ d. $x < -1$

$$x-2 < -3$$

$$x < -1$$

22. Solve the following inequality: $4x + 7 \geq 2 + 3(x-1)$

- a. $x \geq -8$ b. $x \geq 2$ c. $x \leq -8$ d. $x \geq 6$

$$4x+7 \geq 3x-1$$

$$x \geq -8$$

23. The volume of a sphere is given by the formula $V = \frac{4}{3} \pi r^3$, where r is the radius of the sphere. Find the approximate volume of a sphere with a diameter of 10 meters, using 3.14 for pi.

- a. 4190 m^3 b. 60 m^3 c. 520 m^3 d. 290 m^3

$$\frac{4}{3} (3.14) (10)^3$$

$$3140 \cdot \frac{4}{3}$$